

REMARKS

I. Summary of Office Action

Claims 1-37 are pending in this application.

Claim 13 is rejected under 35 U.S.C. § 112, second paragraph, as allegedly failing to point out and distinctly claim the subject matter of the invention. Claims 14-15 are rejected as being dependent on rejected claim 13.

Claims 1-3, 8-11, 16-20, 25-31, and 32-37 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Swami U.S. Patent Application Publication No. 2002/0116426 (hereinafter "Swami").

Claims 21-24 are rejected under 35 U.S.C. § 103(a) as allegedly being obvious from Swami, in view of Park et al. U.S. Patent No. 6,359,468 (hereinafter "Park").

Claims 4-7, 12, and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

II. Summary of Applicant's Reply

Applicant has amended independent claims 1, 25, and 32 to more clearly define the claimed invention. Applicant has amended dependent claim 13 to clarify the claimed subject matter. No new matter has been introduced and the amendments are fully supported by the specification.

Applicant notes with appreciation the indication of allowable subject matter in claims 4-7, 12, and 15*.

* Claim 15 has been listed as being both rejected and allowed in the Detailed Action. Applicant has treated claim 15 as having been rejected as dependent on a rejected claim basis in preparing this Reply to Office Action. However, in view of the amendments to the claims and arguments presented herein, applicant respectfully submits that claim 15 should be allowed.

Applicant expressly reserves the right to rewrite any of claims 4-7, 12, and 15* in independent form should its respective base claim ultimately not be allowed.

The Examiner's rejections of claims 1-3, 8-11, and 13-37 are respectfully traversed.

III. Applicant's Reply to the § 112 Rejection

Claim 13 has been rejected under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. Claims 14-15 have been rejected as being dependent on claim 13.

Applicant has amended claim 13 to more clearly define the claimed subject matter. Applicant submits that the amendments are fully supported by the specification, notably by FIG. 3 and by page 5, lines 9-10 ("LUTs 20 constitute the first two stages"), page 11, lines 31-32 ("the XOR gate and associated circuitry [includes] elements 350, 354, and 356"), and page 16, lines 9-11 ("XOR circuitry can be implemented by an XOR gate or any logically equivalent combination of elements"). No new matter has been introduced. Applicant submits that dependent claim 13, as amended, is allowable.

Dependent claims 14-15, which are rejected as dependent on claim 13, are allowable at least because they depend from an allowable claim. Applicant respectfully requests that the rejection of claims 13-15 be withdrawn.

IV. Applicant's Reply to the § 102 Rejection

Claims 1-3, 8-11, 16-20, 25-31, and 32-37 are rejected under 35 U.S.C. § 102(b) as being anticipated by Swami. This rejection is respectfully traversed.

Applicant has amended independent claims 1, 25, and 32 to more clearly define the subject matter that applicant regards as the invention. Applicant's independent claims 1, 25, and 32 are directed towards circuitry and methods related to logic modules, the modules including combinational logic circuitry having at least three stages, and XOR circuitry interposed between two of the stages or between the third stage and an output. As amended, the claims specify that the XOR circuitry receives at one input a carry in signal and at another input an output signal of one of the stages of circuitry.

Swami refers to a look-up table apparatus for performing arithmetic operations including carry generation. The circuitry described by Swami includes four 2-input look-up tables (LUTs) 13a-d, the two output leads of the first two LUTs 13a-b serving as inputs to a first XOR gate 17-1A, and the output leads of the second set of LUTs 13c-d serving as inputs to a second XOR gate 17-2A. The output leads of XOR gates 17-1A and 17-2A are coupled to the select input of switches 15-1A and 15-2A. Switch 15-1A selectively transmits to its output either fixed logic values of 0 or 1 (set by memory elements 173A and 174A), or a carry-in signal *C_{in}*, or a circuit input signal (*B_{arith}* or *B*). The signal at the output of switch 15-1A may serve to selectively operate switch circuitry, or may be transmitted as a carry-out signal *C_{out}*.

The Office Action contends, on pages 2-3, that the claimed invention is anticipated by Swami. Applicant submits that Swami does not show or suggest XOR circuitry receiving at one input a carry in signal and at another input an output signal of one of the stages of combinational logic circuitry. Instead, Swami shows XOR circuitries 17-1A and 17-2A

receiving at both inputs output signals from LUTs 13a-d. Neither of Swami's XOR circuitries 17-1A and 17-2A receive at an input a carry in signal.

The Office Action contends that the combination of Swami's XOR gate 17-1A and switch 15-1A form XOR circuitry in accordance with the claimed invention (Office Action, pages 3 and 5). However, as defined in applicant's detailed description of the invention, "XOR circuitry can be implemented by an XOR gate or any logically equivalent combination of elements" (page 16, lines 9-11). At least because the combination of Swami's XOR gate 17-1A and switch 15-1A do not produce a logic output signal CY0 that corresponds to the XOR logic function of the circuitry's inputs C_L, C_Li, B, and Cyin, applicant submits that Swami's elements 17-1A and 15-1A do not implement XOR circuitry in accordance with the invention.

For at least these reasons, applicant submits that independent claims 1, 25, and 32 are allowable. Dependent claims 2-3, 8-11, 16-20, 26-31, and 33-37, which depend from one of independent claims 1, 25, and 32, are allowable at least because they depend from an allowable claim. Applicant respectfully requests that the rejection of claims 1-3, 8-11, 16-20, 25-31, and 32-37 be withdrawn.

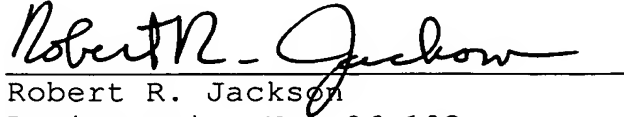
V. Applicant's Reply to the § 103 Rejection

Claims 21-24 are rejected under 35 U.S.C. § 103(a) as allegedly being obvious from Swami in view of Park. Applicant has shown independent claim 1 to be allowable. Claims 21-24, which depend from claim 1, are allowable at least because they depend from an allowable claim. Applicant respectfully requests that the rejection of claims 21-24 be withdrawn.

VI. Conclusion

In view of the foregoing, claims 1-37 are in condition for allowance. Reconsideration and allowance of this application are accordingly respectfully requested.

Respectfully submitted,



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